

REMARKS

The Examiner in this application relies on newly cited references to reject claims 1, 3-14 and 16 under 35 U.S.C. § 103(a). Prior rejections have been withdrawn and the Yano et al U.S. Pat. No. 6,077,896 and Nakagawa et al published application No. 2002/0137841 references now are relied upon.

The Examiner states that Yano et al teaches a composition (abstract) that, in its most fundamental embodiment, comprises a silane-derivatized polyether and a compound having α , β or γ -diol structure of which the instantly claimed compounds are exemplary (see column 4). Relevant to the present discussion, according to the Examiner the added incorporation of a vinyl polymer bearing silyl groups is contemplated in column 3, lines 63-67. Suitable vinyl polymers are identified as those that are originally disclosed in the three Japanese patent documents identified in column 4, lines 1-5. A quick review of these documents verifies that they teach vinyl polymers equivalent to those mentioned in claims 4-7. However, it is not clear that these polymers adhere to the polydispersity limitation now set out in the claims and, in fact, the vinyl polymers taught in the older two references almost certainly wouldn't adhere to this limitation given that living free radical polymerization techniques weren't developed until later.

According to the Examiner, it is notable, on the other hand, that the compositions disclosed by Yano et al are for use as construction sealants (see column 7, lines 3-5) because Nakagawa et al says that the employment of polymers having a broad molecular weight distribution as sealant materials is problematic for the reason outlined in paragraph [0012]. Nakagawa et al goes on to describe the preparation of vinyl polymers having a low polydispersity that exploits the same synthetic approach that is used by Applicant, i.e. atom transfer free radical polymerization. See paragraphs [0043] and [0044].

On this basis, the Examiner has concluded that it would have been obvious to one having ordinary skill in the art to replace the polymers taken in the preparation of the vinyl polymers mentioned with polymers that are similarly-constituted but have been made by the synthetic approach disclosed in Nakagawa et al to yield polymers having a narrow

polydispersity so as to improve the viscosity properties of the resulting composition. As hereinafter made clear, however, the applicants submit that this conclusion is not well-founded.

First, the applicants make it clear that the present invention aims to solve the problem that a curable composition, including a vinyl polymer with small molecular weight distribution (less than 1.8), has only low storage stability. Such problem was first recognized by the applicants after such a vinyl polymer with small molecular weight distribution was made by, for example, living polymerization techniques. To solve this problem, i.e., to improve such storage stability, a specific type of ester compound having α , β - or α , γ -diol structure, including glycerol monocarboxylic acid ester, a polyglycerol carboxylic acid ester, a pentaerythritol monocarboxylic acid ester, pentaerythritol dicarboxylic acid ester, a sorbitan monocarboxylic acid ester, and a sorbitan dicarboxylic acid ester, is added to such vinyl polymer with small molecular weight distribution. Therefore, the present invention is directed to a curable composition comprising a vinyl polymer having at least one crosslinkable silyl group, which has a molecular weight distribution of less than 1.8; and specific type of α , β - or α , γ -diol ester compound. The excellent effects of the present invention are concretely shown in Table 5 of the present application (refer to the bottom column of Table 5). The storage stability can be checked by the percentage of skinning time delayed after 50° C X 4 weeks of storage. The percentages of Examples 3 to 6 are less than about 1/5 to 1/3 compared to Comparative Example 3. The data shows excellent stability of the present invention.

Yano et al., is directed to polyether polymer and does not disclose the concrete problem and effects of the curable composition. The combination of Yano et al., and Nakagawa et al., would not be obvious since there is no teaching or suggestion in Yano et al. of the problem to be solved by the present invention, i.e., the problem accompanied by a vinyl polymer with small molecular weight distribution (less than 1.8). Yano et al., does not concretely show the storage stability in any of the Examples.

Finally, the concrete structure of the present invention is different from those of Yano et al., or Nakagawa, et al. Also, none of the documents disclose nor suggest that glycerol monocarboxylic acid ester, a polyglycerol carboxylic acid ester, a pentaerythritol monocarboxylic acid ester, pentaerythritol dicarboxylic acid ester, a sorbitan monocarboxylic

acid ester, and a sorbitan dicarboxylic acid ester, can be added to the vinyl polymer to improve storage stability.

Applicants respectfully submit that the aforescribed facts and explanation supporting them explain clearly why the claimed invention would not have been obvious. Accordingly, Claims 1, 3-14 and 16 should be allowable and the application passed to issue.

Respectfully submitted,

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